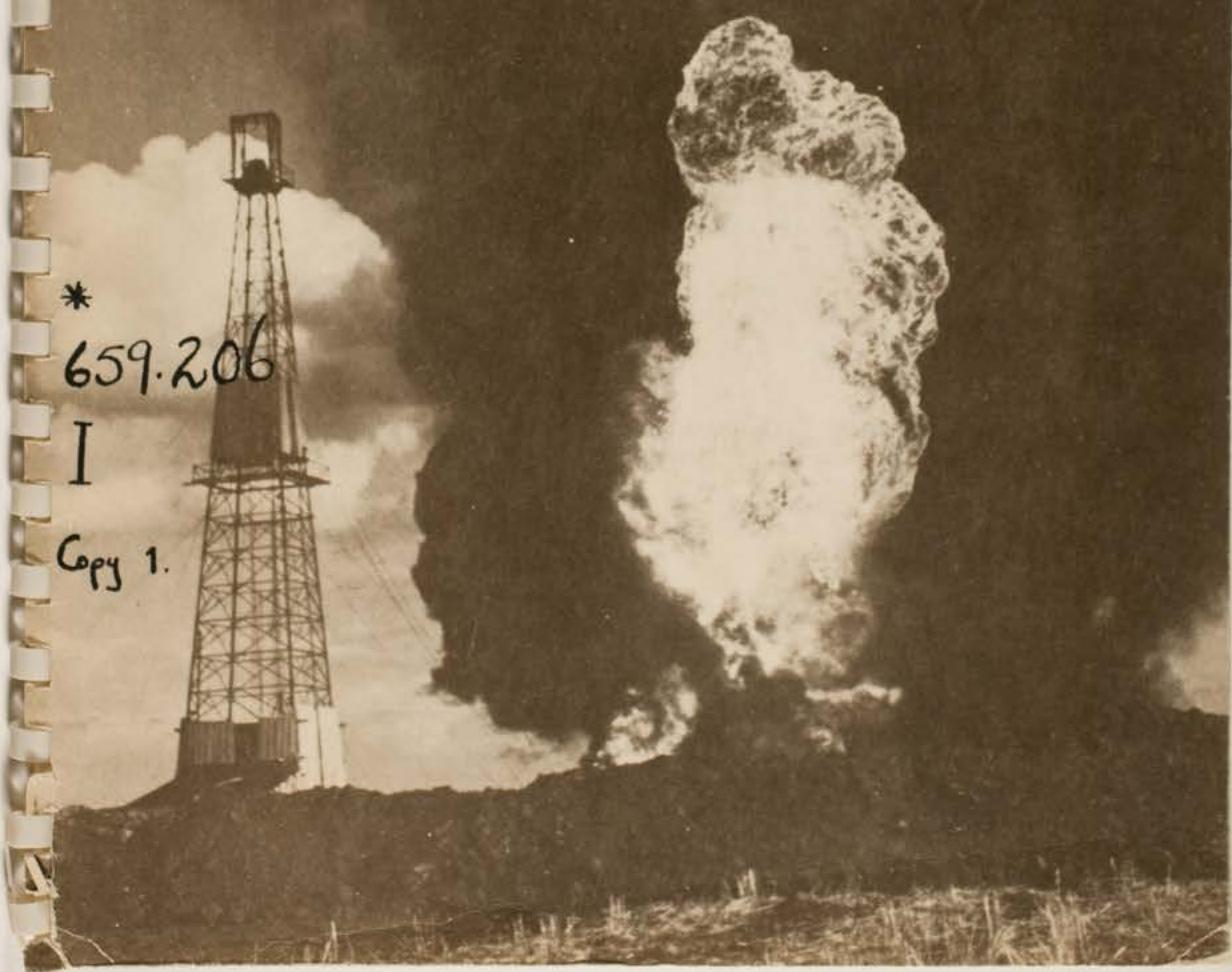


PUBLIC RELATIONS ASPECTS
OF THE LEDUC OIL DISCOVERY



*
659.206

I

Copy 1.

PUBLIC RELATIONS ASPECTS
OF THE LEDUC OIL DISCOVERY

The material on the following pages was originally presented as a talk with slides at the Third Public Relations conference of the Standard Oil Company (N.J.) at Rye, N.Y., December 15 and 16, 1947, by G. A. Lawrence, manager, Public Relations Department, Imperial Oil Limited. It outlines the public relations aspects of the discovery, by Imperial Oil, of the Leduc oil field near Edmonton, Alberta, Canada during 1947. It has been prepared in this form in response to requests for it as a case study of a public relations problem.

As this went to press there were 40 producing wells in the field, 28 completed by Imperial, and the proven area was estimated at 8,100 acres with reserves estimated at 80 to 120 million barrels. The limits of the field are not yet known.



February, 1948.

*
659.206

I.

Copy 1.

The conditions which existed in Canada at the time of the discovery of oil at Leduc set the stage for the event.

Canada is an oil-hungry nation geared to an oil economy. She is second to United States in per capita use of oil in the world, but she must import more than 90 per cent. of her needs. Since 1942 her own small production had been declining. Imports had been increasingly hard to find. It was necessary to go farther afield for supplies, and as a result rising transportation costs were added to the generally increasing price of crude oil and products.

In addition, Canada had an adverse trade balance with the United States, and Canadians face a limited austerity program which impinges on the comfort of almost every person in the country. One of the reasons for the adverse trade balance is the heavy cost of importing oil.

There was an even worse prospect than high prices and the discomfort of an austerity program: there were rumblings that the United States, herself hard pressed for oil, might limit exports to Canada.

Yet the demand for petroleum products was increasing.

In this atmosphere the promise of a substantial crude oil discovery at Leduc was a dramatic and exciting thing, holding the hope of additional supplies, lower prices, and an important contribution to Canada's economy which would eventually be translated into a better life for all.

When the first drill stem test at our Leduc discovery indicated the presence of oil, we faced the danger of misunderstanding on several counts.

- There was the very great danger people would think we had found 'easy money'.
- There is a strong, active socialistic movement in the west alert to make political capital out of 'big companies'.
- There was the danger that the public would become excited over the discovery because of the need for oil and then be 'let down' if the well pattered out.
- The laws in Alberta are such that ownership of mineral rights and surface rights is often separated. Thus some are made rich while others gain very little from oil produced on their land. There was the danger that we would be blamed for this state of affairs, and accused of robbing the farmers.
- There was the very great danger that if the government and the people did not understand our operations and trust us we would encounter government interference and excessive regulation.

Our greatest overall danger was the natural resentment of persons in all parts of Canada who might believe a big company had drilled a well and found a pot of gold which they had not earned. If the representatives of radio, newsreels and press did not understand what we were doing, impressions would spread which could do our company great harm in all parts of Canada. We encountered the beginnings of these misunderstandings almost in the first hours



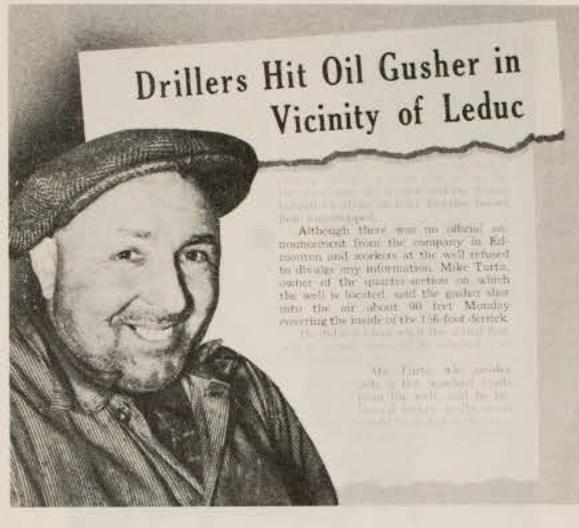
after this successful drill stem test.

-- The press demanded information - Leduc is only 16 miles from
Edmonton, capitol of the province of Alberta.

-- All our senior producing officials were at their offices in
Calgary, remote from Leduc.

-- The well, in completely untested territory, was a 'tight hole',
so drillers refused to talk.

So the press turned to anyone from whom they could get a scrap of
information.



Mike Turta, shown here, the farmer who owned the land on which the well was located, became an 'authority'. Our drillers say Mike had never been nearer the well than his barnyard. He is of foreign extraction and speaks broken English. In this clipping, one of many, Mike Turta is quoted as saying "... the gusher shot into the air about 90 feet, covering the inside of the 156-foot derrick ..." and, further down, "... said he believed other wells soon would be drilled in the area".

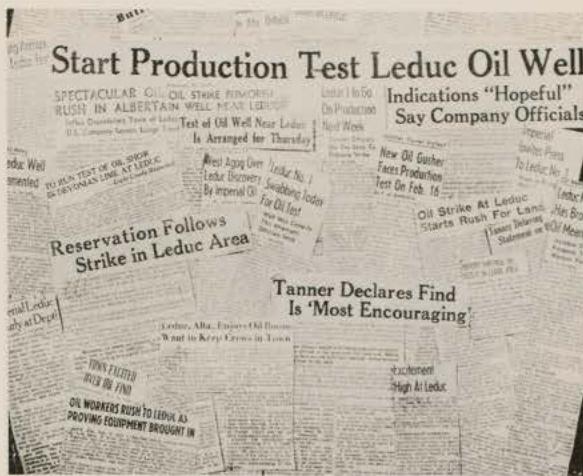


Let's go back and look at that 90 foot gusher.

There was no gusher -- only a flow to the flare several hundred yards from the well.

I show this as an example of the misunderstanding we suffered in the first few days of the discovery, and to illustrate how easily such misunderstandings come about. Already the impression had been created that we had struck an immense flow of oil.

We were in the public spotlight Earl Newsom talked about at our first public relations conference here two years ago.



Our image at Leduc was being reflected by radio and press in every part of Canada. Fortunately we had made preparations for such a moment because we hoped and anticipated our exploration program would eventually result in the discovery of oil.

Our policy of complete frankness was dictated clearly and immediately at board level. Our president, Mr. H. H. Hewetson, clarified the situation at once with a matter-of-fact statement to the press. We had the most complete cooperation of management at our executive offices and in the field. Everyone did his part; exploration people later met and talked to the press, gave speeches, talks on the radio, distributed literature, entertained visitors. This was a team job.

As fast as communications permitted we set about to handle the situation at Leduc. It was decided to make a 'special event' of Leduc No. 1.



More than 300 persons came to see the well come in. We had Alberta government officials, other officials, and many groups.

We held a press conference in an Edmonton hotel on the day we hoped to place the well on production. We introduced news and radio men to our geologists, seismologists, production engineers, senior officials and others. They gave talks about our exploration work, the events leading up to Leduc, and about the discovery well itself. Questions were encouraged and frankly answered. Then we drove out to the field.



More than 500 persons came to see the well come in. We had Alberta government officials, civic officials, oil industry groups, some faculty members of the University of Alberta, prominent citizens. Many persons came from far and near without invitation.



The Mayor of Edmonton, seen at the right, enjoyed himself thoroughly.



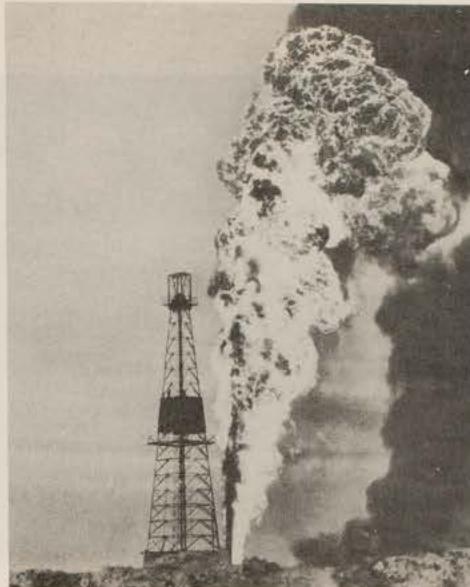
The Canadian Broadcasting Corporation made a coast-to-coast broadcast of the event and an Alberta network later made a half-hour actuality.



We arranged for Honorable N. E. Tanner, minister of lands and mines for the government of Alberta, to turn the valve actually putting the well on production.



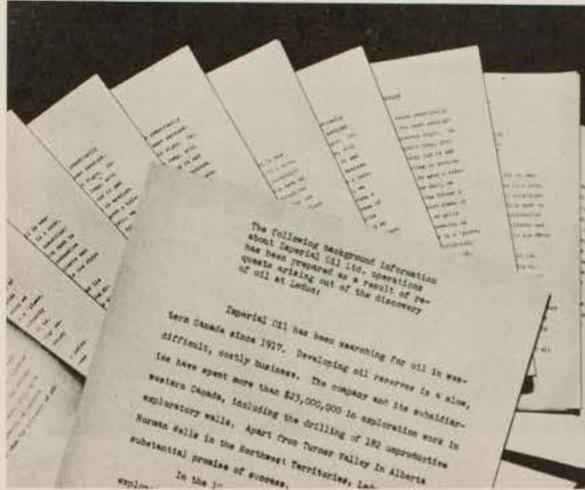
By special arrangement with the Alberta division of the Canadian Weekly Newspapers' Association, we had some of their executives as our guests, resulting in province-wide coverage by the weekly press. One of the executive, himself the owner and editor of a small town weekly, wrote a by-line story which he distributed on behalf of the association to every weekly in the province. We supplied him with mats, which he sent with his story.



This is what was seen as the well came in. It was quite an inspiring sight.

However, the work of the public relations department was just beginning. Now came the dangers -----

- of a 'let down' if the well petered out and failed
- of bitterness on the part of those not owning mineral rights beneath their land
- of accusations of easy money found by a big oil company
- of the farmers who would say their rich farm land was being spoiled for agriculture
- of government interference and regulation



Therefore, from the very first, we provided the government, press, radio, newsreels and the visitors to our wells with up-to-date, factual, interpretive background material.

We told them of our long search for oil, the cost, of the failures of other promising wildcat wells, of the vital need for domestic oil production to bolster our national economy.

As the field developed press background material was constantly revised so that it contained complete, up-to-date factual data. It was regularly distributed to all interested parties and widely used.



Press and radio people in Edmonton knew nothing about the oil business at first hand. So that they could do their job more intelligently we conducted visits during which our technical personnel explained and discussed our operations. Editors and editorial writers, reporters and radio men came to the wells several times. We usually came back to the hotel in a group with several of our technical people and sometimes discussions went on far into the night.

For reporters newly assigned to the 'oil beat' we also conducted private 'short courses' in the technology of oil exploration and development which resulted in a better understanding of our operations and several favourable stories.



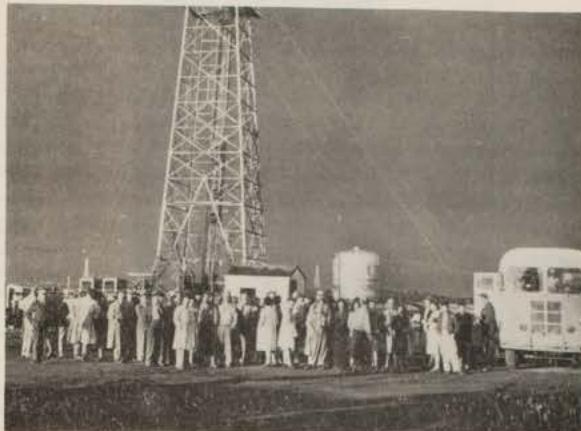
To promote understanding among Edmonton citizens we prepared a series of six informative articles about the oil business which were given feature play by both Edmonton dailies throughout one week.

We also made suitable material easily available to the radio stations and they gave short informative talks. For instance, we were interested in educating the people to the necessity of conservation in spite of the need for oil, and much information was broadcast on this subject.

We did several other things . . .

- We set up a fast and authoritative press information service for spot queries
- We supplied our employees with information
- We arranged showings of our exploration film 'Search Unending', which illustrates the high cost and uncertainty of the search for oil and was to some extent made in anticipation of a development such as Leduc
- We arranged for speakers for service clubs and community organizations
- We published stories in our house publication, the '*Imperial Oil Review*' and based interpretive press releases on these
- We published a Review story on the complex mineral rights situation which we distributed to all lease-holders
- Through Dr. Frey of our farm group arrangements were made with the government and University of Alberta for assistance in weed control and soil restoration at well-sites
- In the same way Dr. Frey arranged marketing farm meetings in the area
- We provided the two Edmonton dailies with assistance in the preparation of a large special edition and supplied an advertisement which has been widely commented on

Mr. Hewetson and other directors took an active interest in the development of the field and their frequent visits and clear and forth-right statements did much to mould public opinion. On the executive level also there was constant interchange of information with the government.



While all these things were taking place, and as the field developed, as many as a thousand visitors would flock to our wells on a single week-end afternoon.

We hired university students as guides, set up displays and in general tried to respond in friendly fashion to the interest of the public in us . . . we were hosts to our own employees, to school teachers, service clubs and other community groups to see our operations as the field developed.

So that week-end visitors would not get lost on unimproved country roads, we set up signs pointing the way to the wells. We directed visitors, by means of these signs, to wells where we were prepared to handle them.

We also identified wells being drilled by Imperial personnel and those being drilled by contractors, because we wanted the public to know when they were talking to someone who was not an *Imperial* employee.

DRILLING FOR OIL AT LEDUC

The discovery of oil at the Imperial Leduc No.1 well has stimulated an interest in drilling in this vicinity which is bound to continue for some time. Once oil has been discovered an effort is made to establish the

A WORD OF CAUTION

Inflammable natural gas and oil may be produced during work at this well; for your own safety and the safety of our crews we must ask you to remain at a safe distance from all operations.

boundaries of the field. This can be done only by drilling, and there is no way of telling whether the rock will be productive until the drills have bored their way down through it.

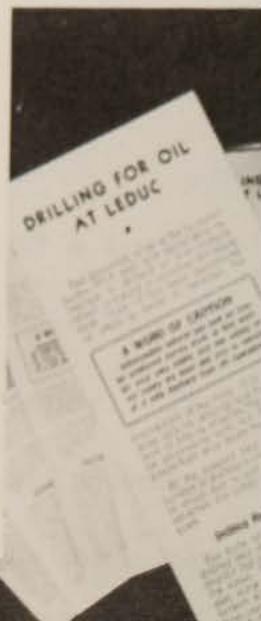
At the present time Imperial Oil Limited is drilling a number of wells, of which this is one, in an effort to establish the limits of the Leduc deposit.

Drilling Rigs Bore Deep

The tools and equipment used in drilling any of these wells may vary slightly but are generally very much the same. The drilling rigs vary in size; some are portable, and may be broken down and moved in sections from one well site to another. The rig which drilled Leduc No. 2 is portable. It is capable of drilling to about 6,000 feet—well over a mile in depth. What are known as heavy duty rigs are also being used. These have to be taken apart and built up again when



vernor Genera
er of Tunis)



ever they are moved. The rig which drilled Leduc No. 1, and which was then moved to No. 3 well is a heavy duty type rig, capable of drilling to about 8,000 feet—more than a mile and a half.

The small building built like a lean-to, which stands at one side of the derrick, houses the engines. Some rigs have internal combustion engines and others use steam. The rig used at Leduc No. 2 was powered with three 175 horse-power Diesel engines.

Mud Helps the Driller

Large mud pits will be noticed wherever there is a drilling rig in operation. Mud is very important in drilling. It is being pumped continuously down to the bottom of the hole and back up again during the drilling. The drill pipe or drill stem—lengths of which may usually be seen lying near a derrick—is hollow. The mud goes down the inside of the pipe and comes back up the outside, between the drill pipe and the inside of the hole. Mud is useful for many things. For instance, it helps prevent the walls of the hole from caving in, lubricates the bit as it drills on the bottom, and carries up the rock cuttings to the surface.

Changing Bits Means Work

In the middle of the derrick floor is a rotary table. The drill stem runs down through the centre of this and as the engines spin the table the drill stem is also turned. The weight of the drill stem, however, is held by the travelling block which may be seen above. The drill stem turns in a swivel below the block.

When a bit becomes dull, the entire drill stem must be lifted, uncoupled,

and stacked length by length in the corner of the derrick so that a new bit can be substituted.

Rock Samples Tell Secrets

When the well is being drilled the well-site geologist watches the cuttings carefully. A knowledge of what lies under the ground is exceedingly important in developing an area such as Leduc. Each well drilled will, whether it produces oil or not, yield important information about the underground structures and will help to determine where other wells should be drilled. Sometimes the geologist asks the drillers to take core samples. To do this a special drilling bit is used which brings up a solid cylindrical core from the bottom of the hole, permitting detailed study of the formation.

Testing Gives a Clue

Sometimes drill stem tests are taken. These are rather complicated, but in simplest terms they permit the oil man to lower a hollow tube right down to the formation in which he is interested, to see whether he has discovered anything there. Sometimes he gets salt water, sometimes natural gas, sometimes oil; he may get any two or all three of these, or nothing at all. The drill stem test is not conclusive. It may even give false information, because small pockets of gas or oil may be found which peter out quickly.

Pressure Drives Oil Up

If an oil producing zone is found, however, and the drill stem tests are favorable (as they were at Leduc No. 1) an attempt will be made to put the well on production. A steel casing is lowered and cemented to the sides



of the hole. The drilling mud is swabbed out of the hole and if the well is a good producer the pressure of the oil and natural gas trapped in the formation below will cause it to push its way up to the surface.

Before this happens a pipe line is laid from the well head to a separator, which is a tall, thin cylindrical tank, not unlike a household hot water tank. Because of fire hazard this is located quite some distance from the well head. In the separator are a series of flat plates. The mixture of oil and natural gas goes in about half way up; as it flows over the plates the natural gas bubbles to the top and the oil drops to the bottom. After a certain amount of oil collects a valve is automatically tripped and the oil is forced out into storage tanks.

Western Canada Needs Oil

Imperial Oil is pleased to have you view its operations at Leduc, and hopes this very brief account may help in an understanding of them. We believe the search for oil is important to the west. Oil is not easy to find; during the past ten years Imperial Oil has drilled more than 114 exploratory wells in the western provinces, and until Leduc No. 1 did not encounter oil in commercial quantities. If all these dry holes were placed end to end they would stretch nearly 100 miles! However, it is hoped the first encouraging results at Leduc will finally result in the development of a field. If it does it will help everyone, for the west is short of crude oil and importation by rail is a costly business.

Imperial Oil Limited, Producing Dept.
Calgary, Alberta.

mud is
d if the
ressure
ped in
se it to
s.

line is
curator,
il tank,
water
this is
om the
are a
ture of
about
ver the
s to the
bottom.
collects
ed and
e tanks.

Oil

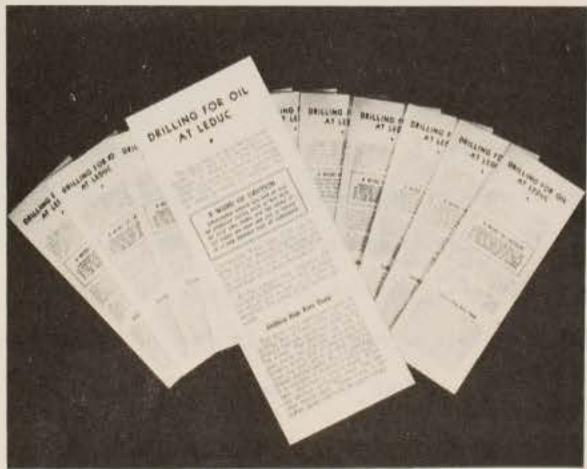
ive you
ic, and
t may
f them.
l is im-
ot easy
years
re than
western
o. I did
d quan-
s were
stretch
r, it is
sults at
) devel-
ill help
hort of
all is a

g Dept.

17.



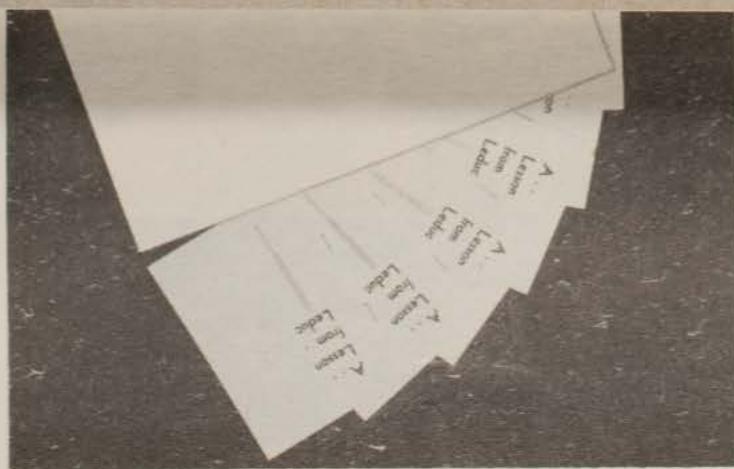
Even the Governor General of Canada, General Alexander, (Viscount Alexander of Tunis) and his wife and family, came to visit Leduc.



People who came to visit our wells wanted information, and our guides and drillers could not always answer them in person.

So we prepared an informative, interpretive little leaflet 'Drilling For Oil at Leduc' which was placed in 'Help Yourself' boxes.

A . .
Lesson
from
Leduc



A LESSON FROM LEDUC

When an oil company begins drilling in a new territory it is only logical that the people in the district should show interest.

If the well turns out to be a producer the interest is bound to be intensified, for the people stand to profit in various ways from subsequent developments.

How important is it for the company to take advantage of the interest aroused and guard against misunderstanding or misrepresentation?

This depends primarily on the business in which the company is engaged. If it is a company that only drills wells and sells its production on the open markets its popularity in a community may not be regarded as of immediate consequence. If, however, it also refines and markets products the good opinion of all the neighbors and visitors must be maintained because all of them are actual or prospective customers.

Perhaps the greatest obstacle to good understanding is the fact that while the discovery of oil brings affluence to some of the residents, many who are not similarly favoured may regard the producing company as a convenient scapegoat on which to lay blame for their inability to share in the de-

velopments. So many factors are involved in the ownership of mineral rights that, unless the facts are clearly understood, an impression may be created that some of the land owners have been sharply treated. This idea must be combatted; if allowed to spread it will do great harm.

In Western Canada the largest proportion of the mineral rights is vested in the Crown, that is to say the provincial governments administer them on behalf of the people. The railway companies, the Hudson's Bay Co., and various land companies have considerable tracts at their disposal. Individual owners of mineral rights are comparatively few and are usually people who purchased their land in the early years when mineral rights went along with surface rights. In many cases where land has changed hands the original owner has retained the mineral rights, a fact not always drawn to the attention of the purchaser nor considered important at the time. In some cases mineral rights which were once included in the title have reverted to the Crown because of failure of the owners to pay the comparatively recently imposed provincial mineral taxes.

The first step of an oil company bent on exploration would probably be to secure a "Reservation" under the Mineral Resources Act of the province in which it desired to operate.

The Company would then undertake to carry out geological or geophysical surveys, core drilling or other investigations necessary to determine the structural possibilities of the area and on completion of this work final reports are furnished to the province.

If these investigations were conducted to the satisfaction of the government authorities, credits would be established on the basis of one half the total expenditures made. These credits could be applied on the first, second and third year's rental of any leases the company desired to acquire from such a reservation, or in the event of the whole reservation being cancelled on other company owned leases. The annual lease rental would be \$1.00 per acre and there would be an obligation to commence drilling a well within a stipulated period. The province reserves a royalty of one-eighth or a royalty of five to fifteen percent, based on a mathematical computation of the average daily production for the month of all the oil produced, whichever the operator selects.

If, after investigation, the company decided to drill, it would naturally try to get leases around the drilling location. If land held in fee simple (that is, including mineral rights) were adjacent to the site it would endeavour to secure a lease from the owner on the same terms as demanded by the Crown.

In granting such a lease the owner, in a sense, is gambling at the company's expense. Without putting up any money he stands to profit by one-eighth of any oil that may underlie his property and the company will safeguard his interest by obligating itself to locate wells in such a way that **his** oil will be produced and marketed.

In these circumstances the landowner is getting a little ready money as rental and there is the possibility of his getting a lot of money in royalties. If a well producing 100 barrels a day is drilled on his land and the oil sells for \$2.50 a barrel the owner of the mineral rights would have a return of something in the neighborhood of \$10,000 a year on an investment of absolutely nothing.

If the oil company drills a dry hole its investment of time, money and labour is a total loss; what the landowner loses is his rosy dream of affluence.

But what happens if the well is a success? People who formerly stood aloof and would have remained aloof if the well had been a dry hole now go after acreage "close in" and because of the discovery well has so greatly reduced the element of risk they are able and willing to pay higher prices for leases than could reasonably have been offered when the chances of winning were so slim.



The pioneering company spent perhaps \$50,000 on surveys and might have had to risk from \$150,000 to a million dollars in drilling. If, before it could take this gamble, it had to pay high prices for leases it might have passed up the territory and so the oil might never have been found. Later comers, relieved of all the exploratory expenses, can afford to bid each other up for acreage. Some of them may look to the stock market rather than to the ground for a return on their money.

However, it is when a discovery well sets lease charges soaring that the shoe begins to pinch for the farmer who leased his mineral rights before the discovery. He forgets that he made, what was considered, a sound bargain under the conditions that prevailed; that he is going to get a good return—one-eighth of the oil produced from under his land—and that if he had not made the bargain neither he nor his neighbors might have had anything at all.



Then, too, there is the surface owner who does not own the mineral rights. It does not make him particularly happy that while his mineral-rights owning neighbour is being paid a royalty he is getting nothing except rental for a small parcel of land occupied by a drilling rig.

The task of an oil company, and it is no easy one, is to convince the public that it is conducting a hazardous business in a legitimate way.

It should be aided towards this end by being able to point to the long list of unsuccessful test wells, some extremely expensive, which the industry has drilled in the West, and the fact that there was not one single factor which made Leduc No. 1 any more attractive than hundreds of other tests when it spudded in.

The company can emphasize the point that it has no control over the incidence of mineral ownership and that, in its leasing, it has complied with what the provincial government considers to be equitable regulations.

It can explain what its operations will mean to the occupant of the land, irrespective of who owns the minerals. Sites for drilling will be leased under restrictions which safeguard the crops, the herds and the installations of the owner or tenant. Rental on these sites will more than compensate for loss of the use of the land and, if the company is considered to be unreasonable, an arbitration board will adjust differences of opinion.

The company can stress the benefits which its operations will bring to the community at large. Its workers and their families will require accommodation; single men will patronize the hotels; stores will have new customers with ready money to spend; local residents will find employment in hauling material and in construction; visitors will be attracted to the vicinity.

Roads to the well locations will become permanent improvements with the oil industry contributing to their construction and maintenance. Permanent construction for warehousing and shipping the oil will add to assessed property values and help reduce individual taxation.

The royalty cheques, going regularly to the fortunate recipients, will increase the spending power of the community and the revenue derived by the government from this same source will lighten the burden on the taxpayer.

Every barrel of oil produced will displace a barrel of foreign oil (which, incidentally, we are mighty glad to get under present conditions) brought at considerable cost to the prairie refineries. Given a sufficient number of barrels, millions of barrels in fact, the cost of petroleum products will ultimately be reduced by this saving in transportation.

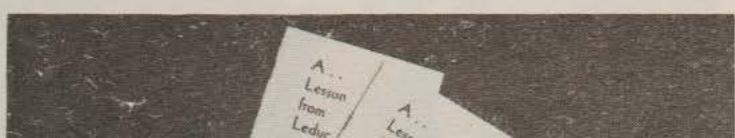
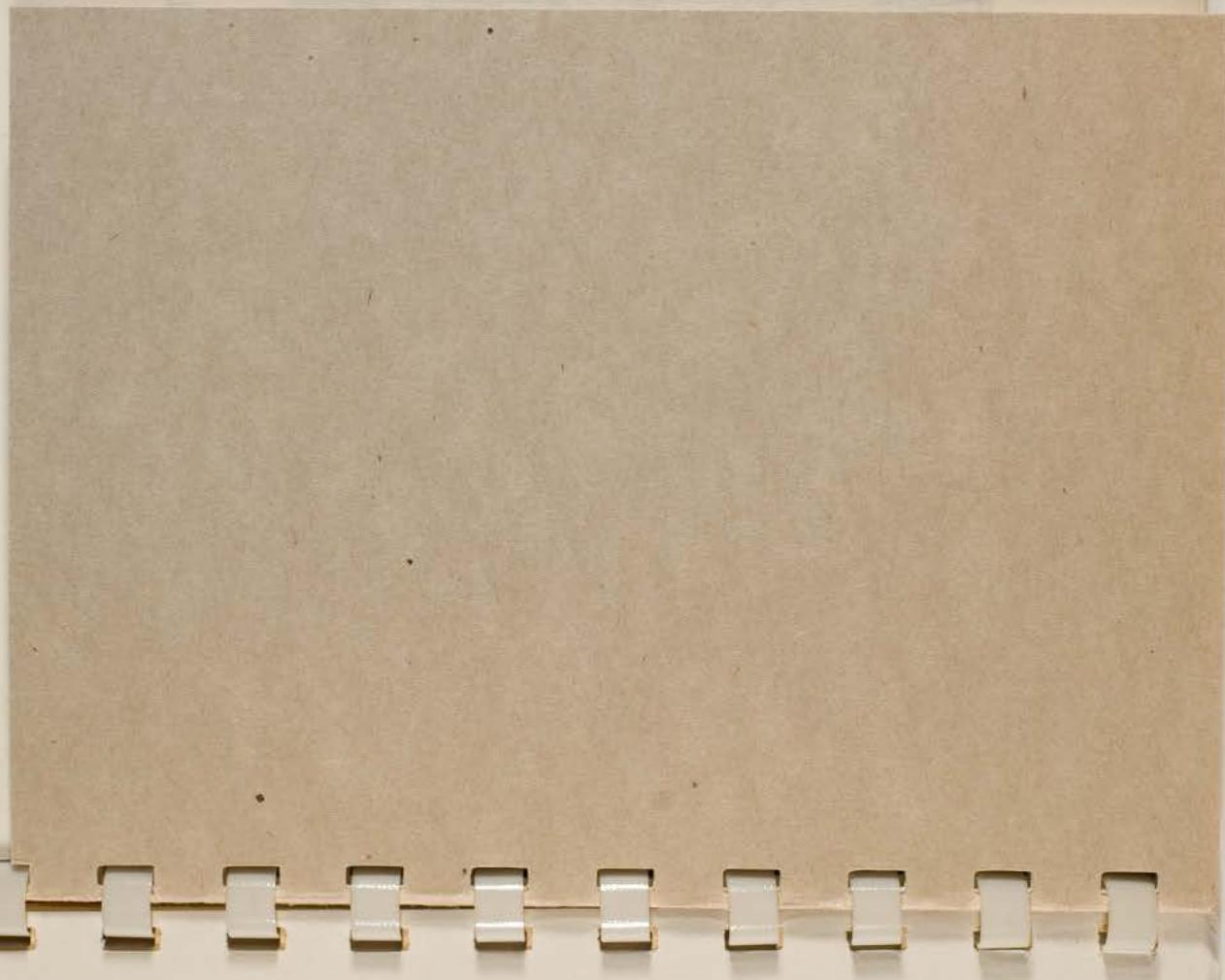
Reduce the farmers' power costs and his production costs are also lowered; reduce production costs in agriculture and the entire nation will benefit.

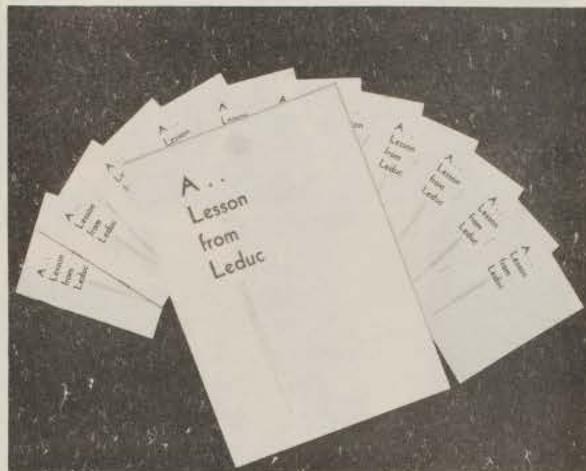
Only a very few of the many who make up the community may have cashed in on the "easy money" which flows in the wake of a flowing well, but the substantial and lasting benefits which the development of an oil field will bring to all the community should be demonstrated and driven home by every legitimate method available to the operating company.

Leduc emphasized the need for some such system of education. It also demonstrated that the public reacted favourably to the steps taken and the methods employed to satisfy their natural curiosity.

The man who drives his "Model T" over 10 or 15 miles of gumbo or gravel to have a closer look at the derrick which has appeared on his horizon is entitled to a better reception than a "Keep Out; That Means You" placard.

He got more than that at Leduc and appreciated it; he came again and brought "his mother and his sisters and his cousins and his aunts," all prospective customers for Imperial products.





We also prepared a booklet entitled 'A Lesson From Leduc' which has been sent to every employee in Alberta and selected other persons. It endeavours to tell employees how we as a large oil company can protect ourselves from misunderstanding in such circumstances as those prevailing following the discovery of oil at Leduc.

THE OIL SEEKERS

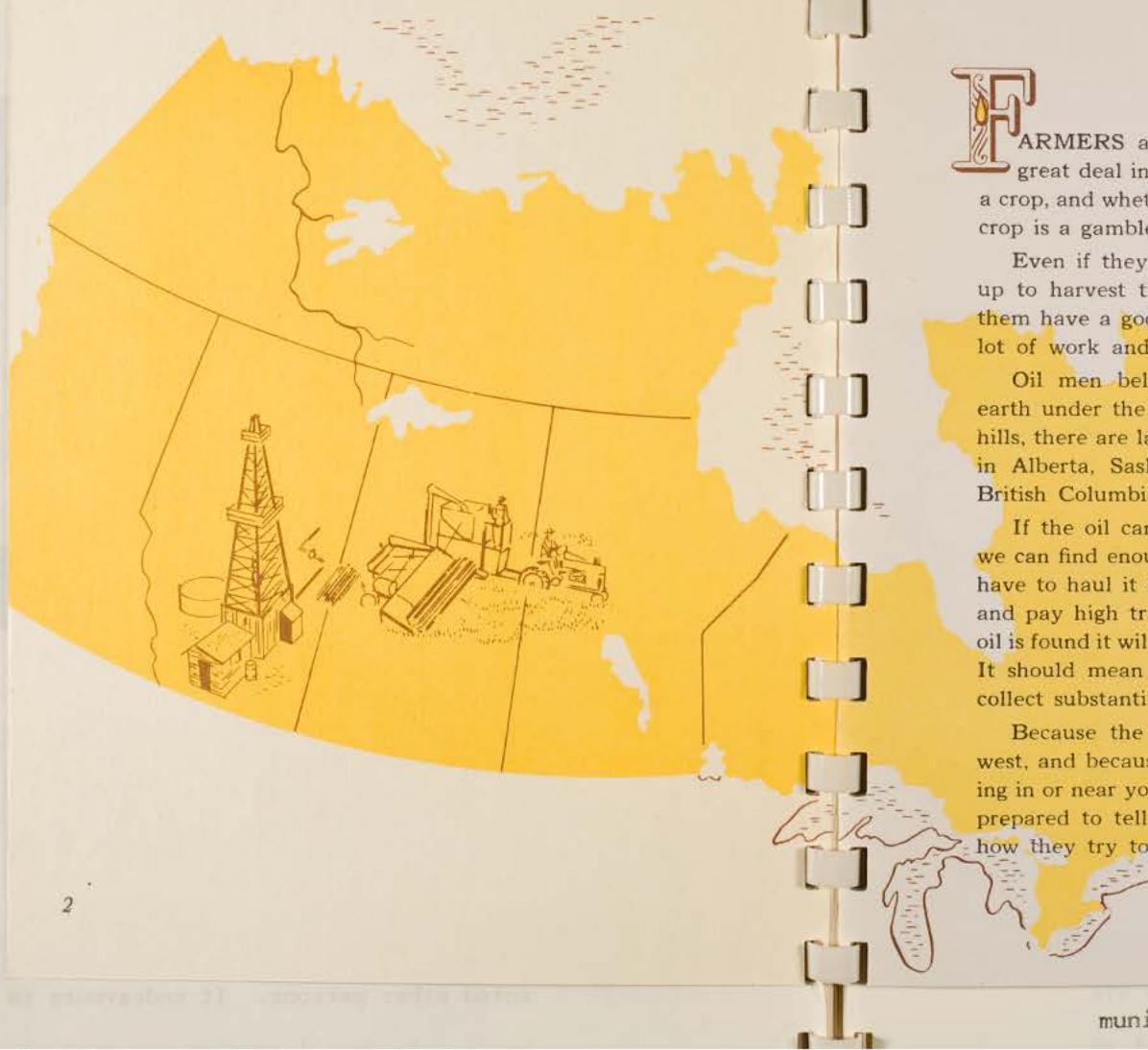
SEARCHING FOR OIL IN WESTERN CANADA

munities they visit in the continuing search

In Edmonton the school authorities have

these for every student in secondary schools.

THE OIL SEEKERS



F

ARMERS and men who search for oil have a great deal in common. Both are trying to harvest a crop, and whether or not nature lets either have his crop is a gamble.

Even if they do get a crop, it is a gamble right up to harvest time whether nature is going to let them have a good crop or a poor one. Sometimes a lot of work and money brings no return.

Oil men believe that somewhere, deep in the earth under the prairies and Rocky Mountain foothills, there are large deposits of oil and many people in Alberta, Saskatchewan, Manitoba and parts of British Columbia have seen oil seekers at work.

If the oil can be found it will help everyone. If we can find enough of our own crude oil we will not have to haul it from far down in the United States and pay high transportation costs as we do now. If oil is found it will mean more employment and wages. It should mean lighter taxes, because governments collect substantial royalties on oil.

Because the search for oil is important to the west, and because those who seek oil may be working in or near your community, this booklet has been prepared to tell you something about oil men and how they try to reap their harvest.

munities they visit in the continuing search for oil.

HOW OIL WAS FORMED

Before a crop can be harvested it must be sown. The oil man's harvest was sown many millions of years ago, and it grew to maturity deep in the earth.



The geography of the world we live in is constantly changing. In one person's lifetime it may change very little. But the mountains, seas, rivers and plains do not remain the same. If we could imagine a million years of time as but a single day, then in a few of those days oceans would dry up, mountains rise, other mountains sink into the sea.

The western prairies were not always plains, nor were the Rocky Mountains standing by their side. Ancient seas covered great parts of what is now Alberta, Saskatchewan, British Columbia, Manitoba. They came again and again; the land rose above their surfaces and then it fell again and the waters came back.

In these waters there were countless millions of tiny sea creatures which lived their brief lives and died. They fell to the sea bottoms and there mixed with the silt which was washed down by the rivers and streams flowing into the seas.

The silt and other things which fell to the bottom of the seas are known to us as sediments. As the centuries passed these grew deeper and deeper until now the sedimentary areas may be several miles deep under some parts of our western plains. They are deepest near the Rocky foothills, and taper off toward Manitoba.

Far beneath the surface the tiny bodies of the sea creatures were crushed under the great pressures from above. These pressures beneath the surface of the earth also caused heat. This heat and pressure and the passing of countless time turned the sea creatures into petroleum, a word which means "rock oil".

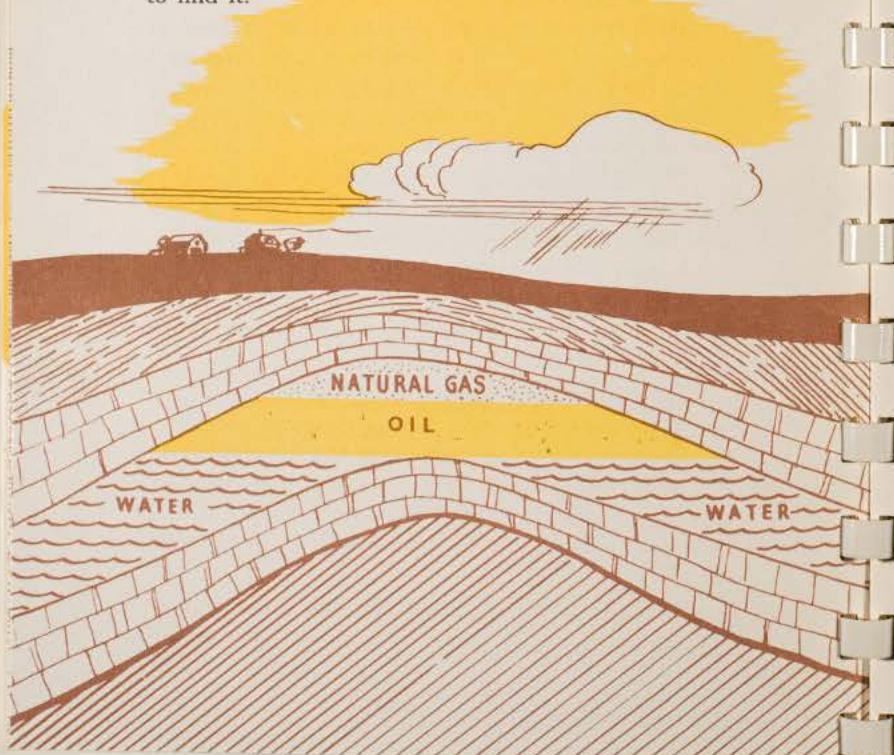
That is how the oil man's crop was sown.

munities they visit in the continuing search for oil.

WHERE *Oil* IS HIDDEN



The oil man has one problem that does not bother the farmer. **Before he can harvest his crop he has to find it.**



It is his biggest problem. The needle in the haystack could not be harder to find than oil on the western plains and foothills. The story of the first 30 years of his search in western Canada is largely one of disappointment, heartbreak and heavy investment with little return. There is just enough encouragement to make him hopeful his next try may bring a bumper yield.

Once oil has formed it begins to seep upward through the layers of rock above it. It moves upward through porous rock toward the surface of the earth as persistently as a stick will bob upward to the surface of a pond. Much oil came to the surface ages ago and was lost.

But nature was too canny to let it all escape. She caught and sealed some of it in great rock traps sometimes shaped like an upside-down teacup, saucer or gravy bowl. These rock formations are what the oil man seeks, but they may be almost anywhere in western Canada; they may lie from a few thousand feet to several miles deep; they may be almost any shape or size.

Once the oil man has located what he thinks is a rock trap beneath the surface he drills a hole. Here nature often plays tricks with him. Perhaps he has found a perfect upside-down saucer-like rock trap, but there may be a crack in it and the oil may have escaped long ago. Or, perhaps, the rock trap is perfect, but instead of oil it may contain natural gas or water, or even all three. There is no way to tell except by drilling deep into the earth.

That is how the oil man's crop has been hidden by nature.

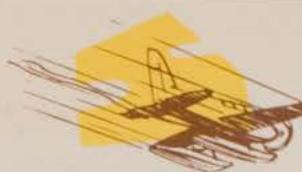
munities they visit in the continuing search for oil.

HOW *Oil* IS FOUND

FIELD GEOLOGY

In finding nature's secret hiding places for oil, men are employed whose work might be compared to that of detectives. These men have worked in hundreds of communities in western Canada. You may see them travelling by canoe, by automobile, by pack train and by air. They use many kinds of tools, ranging from towering drilling rigs to instruments so sensitive they will measure the force of an ant's footsteps! We will start with the men who are known as field geologists.

*The weathered rocks
are ancient pages
of time past*



The field geologist finds his best clues in the deep canyons and gullies which rivers and streams have cut. These canyons often bare layers of rock laid down by the ancient seas. To the geologist these rock layers are the pages of time past, which he reads.

They tell him which way the layers of rock are sloping, and this is important because he is always looking for one of those upside-down rock formations which may have trapped oil.

They also tell him something about the ancient seas in which the layers of rock were first laid down. The shells and bones of the tiny sea creatures are still preserved in the rock that was once the silt floor of the ocean. Some are so tiny they could scarcely be seen on the head of a pin; others may be as big as a man's head. Great volumes have been written about these tiny fossils, and the seas in which they lived; but the important thing they reveal to the geologist is whether there is likely to be oil where they are found.

The field geologist also studies the plains and the foothills from the air, and then in his office studies aerial photos as he seeks to understand the structure of the earth.

He spends months at a time in the wilderness, travelling by canoe or pack train, accumulating his evidence. When he returns he sorts out his clues and adds them to the evidence of others, such as the core drillers.

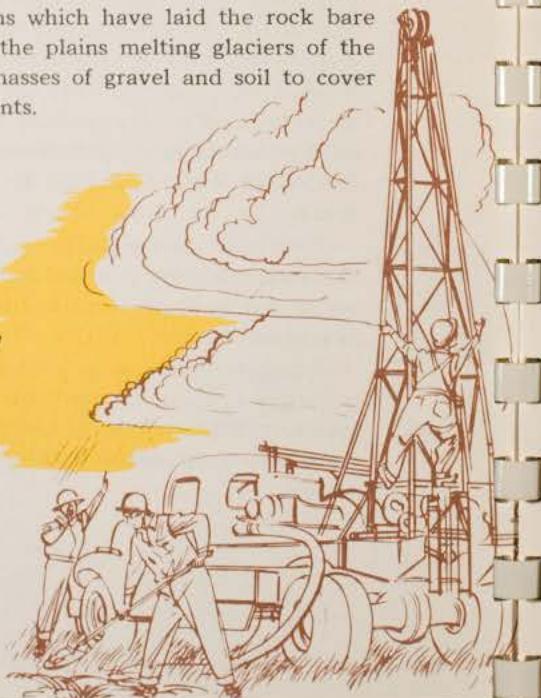
communities they visit in the continuing search for oil.

HOW Oil IS FOUND

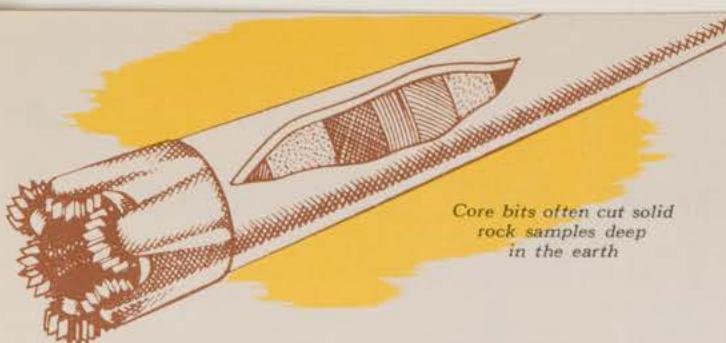
CORE DRILLING

The core driller is the man who peers under the flat soil of the western plains to find the secrets of the rocks below. In the foothills there are plenty of gullies and canyons which have laid the rock bare for study, but on the plains melting glaciers of the ice age dropped masses of gravel and soil to cover the ancient sediments.

Miniature truck-mounted drilling rigs do shallow coring



10



Core bits often cut solid rock samples deep in the earth

The core driller uses a portable drilling rig on a huge truck. In a few moments he can set up his equipment and send his drilling bits boring down into the earth.

When he reaches the sediments below he uses a special drilling bit, hollow in the centre, which cuts cores out of the rock and brings them to the surface.

Geologists who are specialists in subsurface work watch and study these cores, and obtain much the same information from them that the field geologists learn from their gullies and canyons.

All the rock samples are carefully preserved and some of the tiny creatures which lived and died millions of years ago are today entombed—and carefully catalogued for reference—in special store-houses and in universities.

Thus does the core driller help the men who search for oil.

Rock cores reveal the secrets of the earth



11

communities they visit in the continuing search for oil.

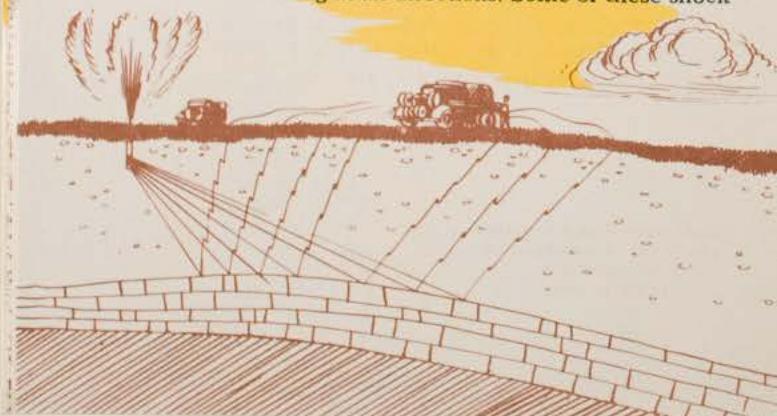
HOW OIL IS FOUND

SEISMOLOGY

Among the most fascinating jobs in the search for oil is that of setting off man-made earthquakes. Like the field geologists, the men who do this are also seeking clues, but they look for them in quite a different way.

These are the men who use an instrument which can measure the force of the footsteps of an ant. It is called a seismograph, and it is the same instrument which gets into the news whenever there is an earthquake by measuring its force.

The seismograph crew drills a hole, places dynamite in it, and sets off an explosion. This sends shock waves travelling in all directions. Some of these shock



waves travel down to the layers of rock below and bounce back to the surface, where they are "caught" by the seismograph. The time it took for them to bounce back is measured in thousandths of a second and so the depth of the rock they bounced back from is estimated. In this way oil men have learned the shape of underground formations, and may discover the rock traps they are seeking.

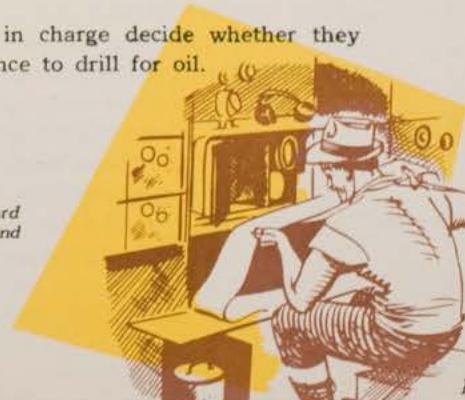
It takes perhaps 30 men to make up a seismograph crew. Such crews have worked over great areas of the western plains and foothills. They use a portable drilling rig similar to the core drilling rig to drill the dynamite hole, and special trucks for the seismograph equipment.

Other scientific instruments are also used in the search for underground rock formations. They vary greatly in the methods they employ and all are quite complicated, but none has been found so useful in Canada as the seismograph.

When the results of the man-made earthquakes and the findings of men using other instruments have been gathered they are studied along with the clues which the field geologists and the core drills have found.

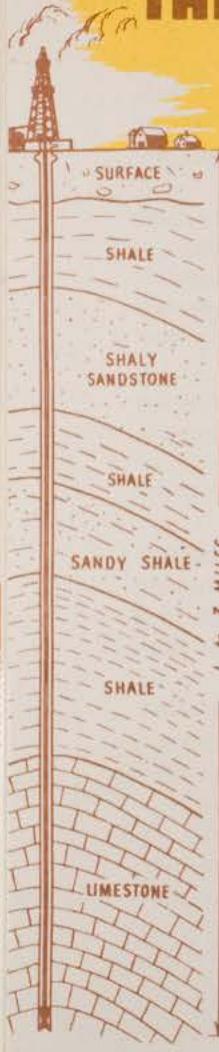
Then the men in charge decide whether they have enough evidence to drill for oil.

Seismograph units record the shape of underground formations on strips of paper



communities they visit in the continuing search for oil.

THE DRILLING RIG



The drilling rig has become the symbol of the search for oil in western Canada. It has been seen from the foothills far out across the plains, and for years to come it will be a part of the western scene.

It is the final test in the search for the hiding place of oil. When all the detectives of the industry have compared their clues and have decided where oil may be found, the drills are brought in to find out if it is really there. Oil men call exploration in untested territory "wildcat" drilling.

Sometimes, as happened in Turner Valley, a large amount of natural gas and oil is found. A success like this encourages more people to risk more money to look for oil.

The Canadian west provides some of the most difficult drilling in the world and most often the drills discover nothing. This is a risk oil men must take. Sometimes the empty holes they leave are two and a half miles deep, and have cost a million dollars. It takes courage and faith—and money—to continue in the face of such disappointments.

During the 10 years before Imperial Oil found oil



Rotary bits will drill through glass-hard rock

near Leduc, Alberta, in 1947, it had drilled 114 wildcat wells without striking a single good producer. If they were placed end to end, these holes would be almost 100 miles deep! They cost many millions of dollars—yet this money must be invested and risked if we are to have gasoline and other products we need.

Wells are drilled by rotating bits, which are attached to a swiveling stem of steel and bore their way downward much as a bit cuts through metal or wood.

In the middle of the derrick floor there is a heavy steel turntable, which is rotated on roller bearings. In the centre it holds a bar of hollow steel. Below this are lengths of drilling pipe which on their lower end hold the drilling bit.

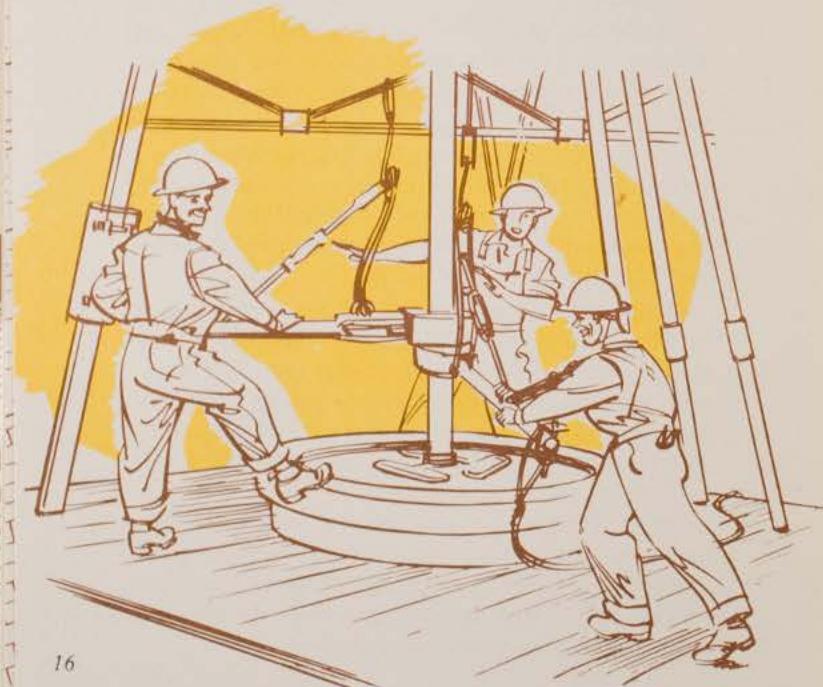
When the drilling bit becomes dull it is necessary to lift the drill stem and stack the lengths of pipe in one corner of the derrick. This is fast, hard work, and calls for great skill. On a deep well it may be necessary to stack two miles of pipe in 90-foot lengths just to change one bit, which may only drill a few feet before becoming dull again.

Mud is important in drilling. It is forced down inside the hollow drill pipe, through the drilling bit, and back up between the inside of the hole and the outside of the drilling pipe. It carries up the rock cuttings and does other useful things.

Drilling derricks all look very much the same, but they vary greatly in size. Some are designed to drill only a few thousand feet; others may drill down almost three miles if necessary.

If there is an Imperial Oil drilling rig near your community, the man in charge will be glad to explain his work to you. You may have to wait for a slack moment, because he will be very busy when he is changing pipe, but he is a friendly man and when he is free he will be glad to chat with you.

His drills are the final test in the search for the oil man's crop.



HOW Oil IS PRODUCED

Oil is precious and once it is found it is important that it should not be produced wastefully. That is why most governments have conservation laws which regulate the amount of oil that may be produced from each well.

The whole matter of conservation is very complex and what follows here is a simple and non-technical explanation of the subject.

Oil is trapped in the earth in many ways, but commonly it is found with gas and water. Gas is lighter than oil and oil is lighter than water.

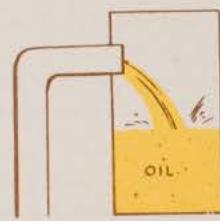
Thus there are often three layers in the porous rock: gas on top, oil in the centre, and water below. All are under tremendous pressure.

The pressure forces some of the gas into the oil, like the gas bubbles in soda water or "pop".

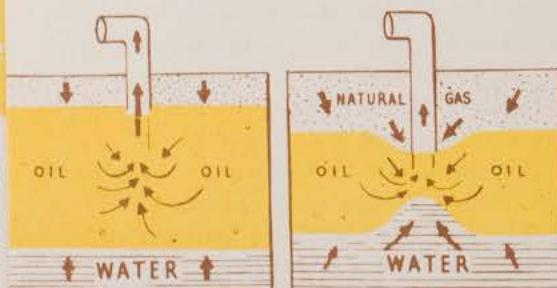
When man drills a hole into the formation he shuts off the natural gas layer with steel pipe but leaves the hole open in the oil zone. The oil rushes into it and up to the surface. As oil moves out of the porous rock into the well the pressure at the hole drops and more oil is pushed in to take its place.

However, water and gas move through porous rock much more easily than oil. If the pressure around the hole is lowered too suddenly the gas will come down from above and the water up from beneath before the oil can move in evenly from the sides. The gas in the oil, seeking to bubble up as in a soda siphon, gushes headlong into the hole and up to the top, driving the oil upward with tremendous force. This is why many older wells were called "gushers" in times past.

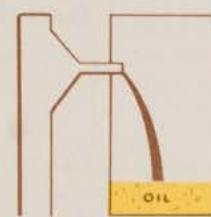
If the well is allowed to gush, however, the gas pressure is soon wasted. The water continues to push upward, but instead of pressing evenly over the bottom of the whole field it comes up in a cone



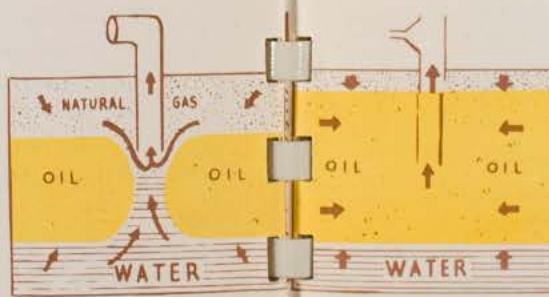
WASTEFUL PRODUCTION



Uncontrolled oil production is very wasteful



EFFICIENT PRODUCTION



Restricting the flow increases ultimate yield



directly under the well. It seals off great areas of productive formation. Soon the well will produce more gas or water than oil, depending on which is the closer. Vast quantities of oil will be wasted.

When oil is produced slowly, through a tiny opening at the top of the well, the water underneath the oil field and the natural gas above it press evenly over the whole layer of oil and it flows in from the sides to the hole.

Thus conservation is designed to obtain the maximum recovery of oil over a long period and to make the greatest possible contribution to the well-being of everyone.

industry as a
called 'The
his as a begin
nt will be ru
ersonnel in

THE OIL SEEKERS

CONCLUSION

There is every reason to hope that there is a large crop of oil waiting to be harvested in western Canada. This is the opinion of the best brains in the industry. But finding oil is not easy; and perhaps we should not be too impatient, since we have spent scarcely three decades searching for something nature took millions of years to hide. In any event dozens of companies, small and large, continue to invest the money entrusted to them by their shareholders in the hope of realizing a reasonable return and of filling a national need for petroleum products.

Once the oil is found it must be transported to refineries where it is made into gasoline, kerosene, tractor fuels, lubricants and other products. Then it must be transported to the places where we buy it. Oil men are proud of the fact that in spite of the cost of searching for oil, transporting and refining it, the price of

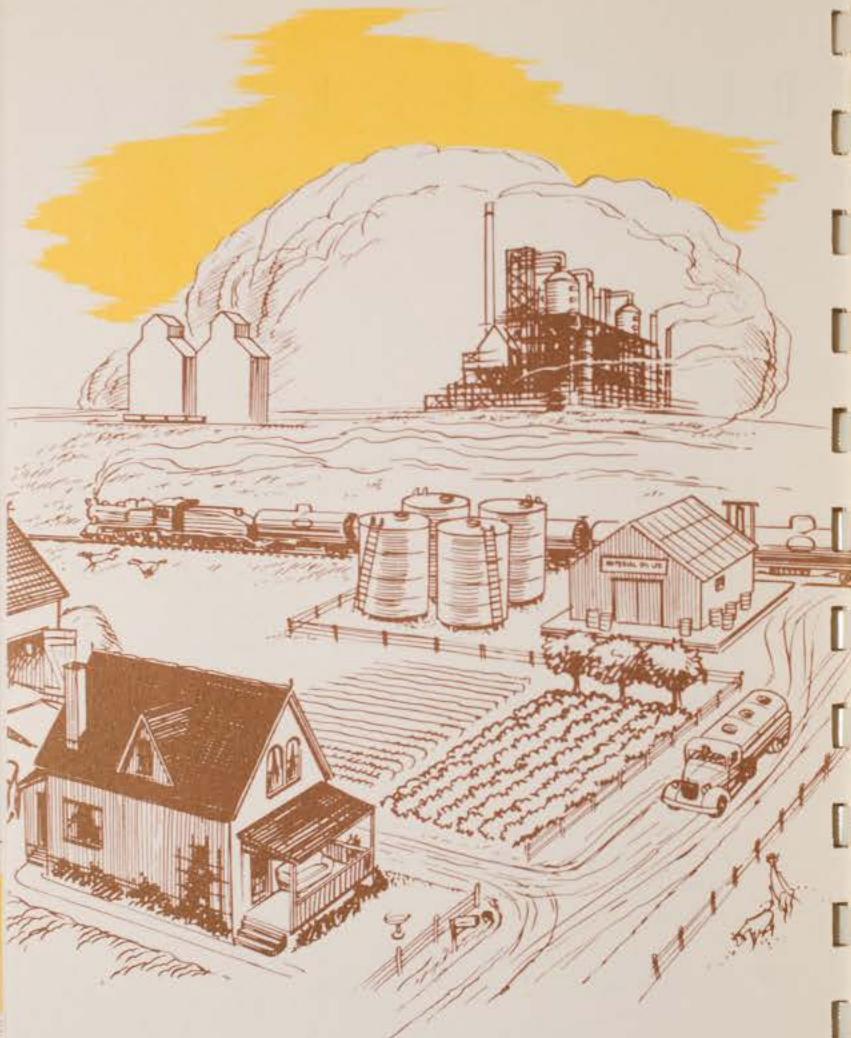
their products generally has dropped steadily through the years although most other commodities have continually increased in cost. They believe the reason they are able to sell their products at prices within the reach of everyone is because of constant scientific research, competition and efficient operation.

In the years following the war, in 1946 and '47, the use of oil by Canadians—for farming, for heating, for many purposes—increased greatly. Canada was importing as much as 90 per cent. of her oil. The cost of crude oil abroad increased as labor and other costs grew higher.

Of all Canada, the prairies have to pay most for transportation because they are so far from adequate sources of supply and have to depend on rail movement.

If the oil man can find and reap his crop he will be helping all of Canada, but mostly the west.

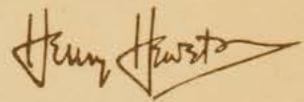




Searching for oil is only one phase of a complete petroleum business; after crude oil is found and produced it must be transported and refined and the products marketed

*If you would like additional copies of this booklet
write to Information Division,
Imperial Oil Western Producing Dept.,
606 Second St. West, Calgary, Alberta.*

*Imperial Oil's function is to render useful services
and to deal frankly and fairly with all concerned:
the customer, the community, the employee
and the shareholder*

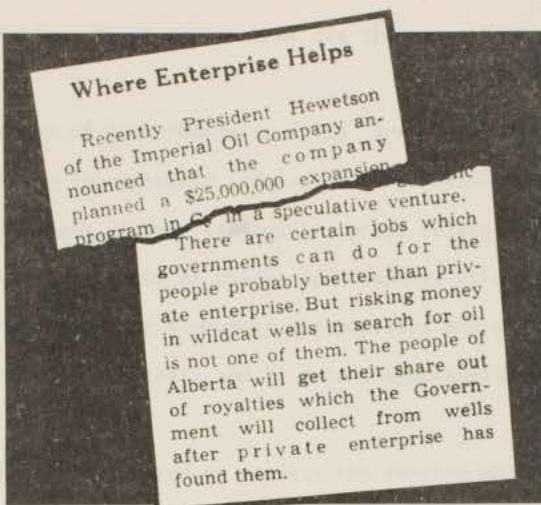


President



Because of the intense interest in our industry as a result of Leduc we have prepared another booklet called '*The Oil Seekers*'. We have run 25,000 copies of this as a beginning, about half of these for schools. A reprint will be run shortly. It will also be widely used by our personnel in the communities they visit in the continuing search for oil.

In Edmonton the school authorities have asked for one of these for every student in secondary schools.



In an area where there are strong socialistic leanings we have endeavoured constantly to tell the story of private enterprise. We have had much editorial support.

These excerpts, from an editorial in the Lethbridge Herald, are one example. *'There are certain jobs which governments can do for the people probably better than private enterprise. But risking money in wildcat wells in search for oil is not one of them,'* and so on.

To summarize, these are some of the things we have tried to do at Leduc:

-- by means of such things as films, speeches, pamphlets, information to employees, liaison with government, exhibits, advertisements, timely statements, press releases, background material and the use of guides and displays at our wells we have endeavoured to show that our policies and actions are in the public interest, and to gain a sympathetic understanding of them,

-- we have endeavoured to explain the complex mineral rights laws to farmers so that they will not blame us for something beyond our control,

-- the company is endeavouring by its actions at the wells, in such things as weed control, soil conservation and restoration and other sound practices, to set an example which will foster good will and public sympathy.

We do not feel we have a perfect record at Leduc -- if we were doing the same job again we might do several things differently. Our public relations work, too, is far from finished. A model town is being built. A pipe line has been constructed and will be extended. The Whitehorse refinery is being moved to Edmonton, a tremendous task. Leduc is a continuing problem which will be a challenge to us for a long time to come.

